REMARKS/ARGUMENTS

Background and Current Status

This Amendment is made in response to the non-final Office Action dated July 29, 2008. The Office Action has been carefully reviewed, and the following remarks herein are considered responsive thereto.

Claims 1–24 were examined and pending in this application, prior to entry of this Amendment. Independent claims 1, 23, and 24 have been amended by this Amendment to overcome the bases of rejection asserted in the Office Action and further to place the claims in condition for allowance. Additionally, dependent claims 5–17, and 19 have been amended, primarily due to the substantive amendments made to independent claim 1. Claim 4 has been canceled by this Amendment. Further, new dependent claims 25 and 26 have been added by this Amendment.

It is submitted that no new matter is presented by this Amendment, as all claim amendments and new claims are properly supported by the application as originally filed. This Amendment is believed to have corrected all deficiencies so that a Notice of Allowance can be promptly issued.

Basis for Allowance of Amended Claims

35 U.S.C. § 101 Rejection

In the Office Action, claims 1–23 were rejected under 35 U.S.C. § 101 on the grounds that the claimed invention(s) were allegedly directed to non-statutory subject matter. Specifically, the Examiner asserted that claims 1–23 were directed to identifying an optimum set of product configurations, but not sufficiently tied to an apparatus and/or did not transform the underlying subject matter to a different state.

In response, Applicant has amended claims 1 and 23 to clarify that raw product configuration data and historical demand data are received and then analyzed/transformed to generate an output of an optimum subset of valid product configurations that are then usable for a wide range of purposes. Thus, the rejected methods have been amended to clarify and confirm

that they involve more than just mere mental steps. The Examiner indicated during the telephone conference of October 24, 2008 that the present amendments would overcome the 35 U.S.C. § 101 rejection of the claims. Accordingly, Applicant submits that this rejection has been appropriately addressed, and should be withdrawn.

35 U.S.C. § 102 Rejection

In the Office Action, claims 1–3, 6, 7, 9–14, and 20–23 were rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by *Kapadia et al.* (U.S. Pat. No. 7,039,602). In response to these rejections, Applicant has amended and clarified independent claims 1 and 23 to highlight more clearly how and why the present invention is patentably distinguishable from the teachings of *Kapadia*.

Specifically, *Kapadia* teaches a conventional "configurator" system that enables a consumer to configure (ie, select features and options of) a product on a per-feature basis while the product is being purchased. Essentially, *Kapadia* describes a product ordering engine that suggests certain "default" (or preferred) features or options that the seller would like to "push" or recommend that the purchaser choose. Such recommendations are made to the purchaser based on the seller's desired goals and based on previous features selected by the purchaser during the current and specific product order. [*Kapadia*, Col. 3, lines 34–58]. The default features are recommended by the system to a purchaser on a feature-by-feature basis, based on prior selections of features or options made by the purchaser. Thus, *Kapadia* does not address and has no reason to address or identify a subset of optimized product configurations for a product that a manufacturer should make or that a retailer should offer for sale from a much larger set of all possible product configurations. [*Id.*, Col. 9, lines 43–60]. Further, the system described in *Kapadia* has no reason to analyze or make use of past sales or demand data, whether purchasers would be willing to accept certain upgrades or substitutions of a product feature, and other similar types of information, because *Kapadia* is merely directed to interacting with an end-user customer during the order process and trying to push or encourage the purchaser to move toward a particular product configuration, but only by suggesting or recommending specific product

features or options over another during a singular product ordering session to achieve a goal for that particular order.

In contrast with *Kapadia*, the present invention as presented in amended claim 1 is directed to a method of generating an optimum subset of product configurations from a plurality of possible product configurations associated with a product, comprising the steps of receiving product configuration data relating to the plurality of possible product configurations, wherein each product configuration includes a plurality of selectable features, each selectable feature including a plurality of options; receiving historical demand data associated with the plurality of possible product configurations; arranging the product configuration data into ordered sets of dimensions, wherein each ordered set of dimensions represents one of the plurality of possible product configurations, wherein each selectable feature of each product configuration is represented by one respective dimension of each ordered set; applying mix-and-match rules to the ordered sets of dimensions to identify a plurality of valid ordered sets of dimensions representing valid product configurations as a subset of the plurality of possible product configurations; defining an optimization model to identify the optimum subset of valid product configurations from the plurality of valid ordered sets of dimensions based on a desired objective and based on the historical demand data; solving the optimization model to generate the optimum subset of valid product configurations that satisfy the desired objective; and outputting the generated optimum subset of valid product configurations that meet the desired objective.

Further, *Kapadia* does not teach, disclose, or suggest, in a computerized system, a method of generating an optimum subset of product configurations associated with a product, comprising the steps of receiving product configuration data representative of a plurality of all possible product configurations capable of manufacture by a company; receiving historical demand data associated with the plurality of all possible product configurations; identifying a plurality of selectable features associated with the plurality of all possible product configurations; identifying a plurality of options associated with each respective selectable feature; arranging the product configuration data into ordered arrays of the selectable features, wherein each ordered array represents one of the plurality of all possible product configurations;

applying mix-and-match rules to the ordered arrays to identify a plurality of valid ordered arrays representing valid product configurations as a subset of the plurality of all possible product configurations; defining an optimization model based on achieving a desired objective; solving the optimization model as a function of the historical demand data to generate the optimum subset of valid ordered arrays representing the valid product configurations that achieves the desired objective; and outputting the generated optimum subset of valid product configurations to the company, which identifies the product configurations the company should manufacture to meet the desired objective, as claimed in amended, independent claim 23.

As an initial matter, it should be noted that independent claims 1 and 23 have been amended to recite the step of receiving historical demand data, and utilizing this historical demand data within the optimization model to generate the optimum subset of valid product configurations. This historical demand data is generally representative of past sales of all product configurations, and helps determine how the product configurations should be optimized (i.e. future demand can be forecasted based on historical demand). In contrast, there is no mention in *Kapadia* of any historical demand or sales data, as this type of information is unnecessary for and unrelated to the teachings, goals, and purpose of the *Kapadia* system.

The system described in *Kapadia* suggests default selections to system users based on desired objectives, such as maximizing profit or reducing inventory, and there is no consideration as to the demand or sales history of certain configurations or features. Accordingly, based on inclusion of this one step alone, the 35 U.S.C. § 102(e) rejection of amended claims 1 and 23 should now be withdrawn, as there is no teaching, disclosure, or suggestion of use or analysis of historical demand data in *Kapadia*. However, in the interest of providing a full and complete response to the Office Action, the following arguments are presented to further distinguish the presently-amended independent claims from the system of *Kapadia*.

In amended claims 1 and 23, the product configuration data is arranged into ordered arrays or sets of dimensions, wherein each array represents a product configuration. These ordered arrays are used by the optimization model of the present invention(s) to optimize the

valid product configurations. The Office Action cites Col. 6, lines 11–23 of *Kapadia* as meeting this claim element of representing the product configurations as ordered arrays. However, the cited portion of *Kapadia* merely discusses selecting available options from a feature list, and then constraining later option choices based on the selected options. There is no mention, teaching, or suggestion in *Kapadia* of representing a product configuration as an array or set of dimensions. At best, *Kapadia* may be read to suggest representing a feature of a product as a list of options, which is not the same as representing an entire product configuration as an array. The system of *Kapadia* has no use for defining an entire configuration as an array, as the features in *Kapadia* are optimized "on the fly" on a per-feature basis as opposed to across all features and options, on a bulk basis to identify the optimum set of configurations to sell or manufacture from the pool of all possible product configurations, based on historical data, but not in response to interaction with a current customer.

Additionally, the Office Action relies upon *Kapadia*, Col. 6, line 56 through Col. 7, line 2, and Col. 7, lines 13–30 as teaching defining and solving an optimization model to identify the optimum subset of valid product configurations based on a desired objective and based on historical demand data. The amended independent claims of the present invention are directed to optimizing product configurations as a whole, taking into account every possible feature and option of all possible product configurations simultaneously and not based on an end users selection of particular features or options during the purchase process. The system described in *Kapadia*, however, presents each feature to the user on a feature-by-feature basis, such that a default option within the particular feature may be suggested to the user based on some optimization goal. *Kapadia* clearly states that "the preferred technique provides for optimization of each selection step independently." [*Kapadia*, Col. 9, lines 56–58, (emphasis added)]. In this way, as a user selects features for a given product configuration, the system of *Kapadia* determines a default option to suggest to the user when the next feature list of the given product configuration is presented. The system of *Kapadia* does not consider all features simultaneously, but instead considers only one feature at a time while a user makes selections to arrive at one valid product configuration. Accordingly, *Kapadia* fails to teach, disclose, or suggest

simultaneous optimization of product configurations from a pool of all possible product configurations.

In fact, *Kapadia* explicitly teaches away from optimizing all options and features associated with a product configuration simultaneously. *Kapadia* states that "[g]enerally, it will not be desirable to perform a complex calculation of all possible item combinations to select the one leading to [a desired objective]," and that "[t]his would complicate the optimization calculation by adding product configuration restraints . . ." [*Kapadia*, Col. 9, lines 51–55, (emphasis added)]. *Kapadia* goes on to state that "[i]t is not necessary, or in some cases even possible, for perfect optimization to be calculated for each item set . . ." [*Id.*, lines 43–44, (emphasis added)]. In contrast, the present invention(s), as set forth in the amended claims herein, are directed to the specific methods and systems that *Kapadia* teaches away from. Specifically, the independent claims presented herein optimize each configuration as a whole, not merely one feature at a time, to generate an optimum subset of product configurations that maximizes profit, reduces cost, or meets some other desired objective. In this way, the present claims are directed to methods that *Kapadia* openly defines as complicated, undesirable, and in some cases, impossible.

Further, as discussed with the Examiner during the telephone interview of October 24, 2008, *Kapadia's* "optimization" (i.e. suggesting default features to a system user) occurs on the fly as each product feature is selected. For example, *Kapadia* confirms that the "default selection . . . is determined at the time a selection list is presented to the user," and that "[t]he user is always free to select any item from the available list." [*Kapadia*, Abstract, Col. 6, lines 65–66, (emphasis added)]. In contrast, the amended independent claims presented herein optimize configurations to achieve a desired objective before those configurations are manufactured or offered for sale to an end user. Specifically, amended claim 23 states that an optimum subset of valid product configurations is generated that identifies the product configurations a company should manufacture to meet a desired objective. In this way, the present claims describe a system that determines an optimum set of product configurations a company should manufacture, distribute, stock, or offer for sale before any purchaser is offered a

product. *Kapadia* is similar to conventional configurator systems that enable a purchaser or end user to customize and configure the product that the purchaser would like the manufacturer to make for that purchaser. Kapadia's novelty and teaching lies in the fact that the configurator makes recommendations or suggestions to the purchaser during the configuration process based on desired goals or objectives of the seller.

For the sake of brevity, Applicant has not addressed each and every assertion made in the Office Action. However, Applicant submits that, based on the amendments and arguments presented above, *Kapadia* can no longer support a 35 U.S.C. § 102 rejection of amended independent claims 1 and 23, since *Kapadia* fails to teach, disclose, or suggest a number of the claim elements of the presently amended claims. Thus, Applicant respectfully requests that the § 102 rejection be withdrawn.

Further, although not specifically addressed above, because independent claims 1 and 23 are allowable over *Kapadia*, it is respectfully submitted that all of their dependent claims, which merely add further limitations or details to each independent claim from which they depend, are equally allowable for the same reasons described above.

35 U.S.C. § 103 Rejection

In the Office Action, claims 4, 5, 8, 15–19, and 24 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kapadia* in view of *Schierholt* (U.S. Pat. Pub. No. 2005/0149377), *Balasinski* (U.S. Pat. No. 7,231,374), and *Walker et al.* (U.S. Pat. No. 7,347,364).

In regard to these rejections, Applicant submits that all arguments and amendments presented above pertaining to the 35 U.S.C. § 102 rejections based on *Kapadia* apply equally to the 35 U.S.C. § 103(a) rejections. Applicant additionally submits that because *Kapadia*, when taken as a whole, teaches away from simultaneously optimizing all features within a configuration, it is inappropriate to use *Kapadia* as a 35 U.S.C. § 103 reference to reject the present claims. [MPEP 2141.02]. However, in the interest of providing a full and complete

response to the Office Action, Applicant submits the following specific arguments to address the assertions in the current Office Action.

Regarding independent claim 24, neither *Kapadia* or *Schierholt*, when taken alone or in combination, teaches, discloses, or suggests a computerized system for generating an optimum subset of valid product configurations associated with a product, comprising a configuration generator for receiving product configuration data, the product configuration data representative of all possible product configurations, each product configuration defined by a plurality of features, each feature having a plurality of options, the configuration generator applying mix-and-match rules to identify a set of valid product configurations, the configuration generator further representing each of the valid product configurations as an ordered array; a demand simulator for receiving historical demand data associated with all possible product configurations and calculating relative demand for each of the valid product configurations based on the historical demand data; a cost calculator for calculating and associating a cost of manufacture for each of the valid product configurations; a revenue calculator for calculating and associating a revenue potential for each of the valid product configurations; an objective-based modeler for defining an optimization model and for receiving product configuration information from the configuration generator, the demand simulator, the cost calculator, and the revenue calculator; and an optimization engine for solving the optimization model based on the received product configuration information and generating the optimum subset of valid product configurations from the set of valid production configurations and for generating costs, revenue, and parts needed for the optimum subset of valid product configurations.

In the Office Action, it is asserted that Col. 6, line 56 through Col. 7, line 2, and Col. 7, lines 13–30 of *Kapadia* teach or suggest the claim element of a cost calculator for calculating and associating a cost of manufacture for each of the valid product configurations. However, there is no discussion in *Kapadia* of a cost calculator that calculates a cost of manufacture for each valid product configuration, and then associates that calculated cost of manufacture with its respective product configuration for further use within the system (as described in claim 24). In fact, the cited portions of *Kapadia* merely teach applying an optimization function to the

selection of default items within a feature list, and in no way mentions calculating or associating a manufacturing cost with those items, much less with an entire product configuration or set of product configurations. Accordingly, *Kapadia* fails to teach, disclose, suggest, or contemplate the cost calculator described in the present claims.

Further, the Office Action asserts that Col. 7, lines 38–44 of *Kapadia* teach the claim element of a revenue calculator for calculating and associating a revenue potential for each of the valid product configurations. While *Kapadia* does generally discuss determining a "profit number" for each item in a feature list, it does not contemplate a revenue calculator for calculating and associating a revenue potential for each valid product configuration. Again, *Kapadia* only contemplates analyzing features in a configuration on a per-feature basis as a configuration is ordered by a customer. *Kapadia* does not (and admittedly, in some circumstances, cannot) calculate a revenue potential for each valid product configuration of a set of all possible product configurations. Thus, again, *Kapadia* simply fails to teach, disclose, suggest, or contemplate the revenue calculator described in the amended independent claim 24.

Additionally, the Office Action relies upon *Schierholt* as a secondary reference to supply the missing teachings from *Kapadia* of a demand simulator for calculating relative demand for each of the valid product configurations. *Schierholt* describes a system for optimizing profit in a supply chain environment by dynamically varying the price of a product based on supply or availability of the product. Regarding demand, *Schierholt* merely discusses monitoring and forecasting demand for products generally, and does not teach, disclose, contemplate, or suggest the ability to calculate relative demand for each valid product configuration, as claimed in independent claim 24. As described in the present specification, demand is simulated at the configuration level using the "history of demand by feature and option." [Specification, Page 30, lines 14–15, (emphasis added)]. Essentially, the present invention(s) determine demand for each specific option of each feature, and then use that demand within the demand simulator to calculate a relative demand for each valid configuration. Thus, because the demand simulation process described in the present claims is much different than simply "monitoring product demand", as described in *Schierholt*, it is inappropriate to use *Schierholt*, either alone or in

combination with *Kapadia*, to support a 35 U.S.C. § 103 rejection of the present, amended claims.

It is believed that the foregoing amendments and arguments have addressed all of the claim rejections made by the Examiner, and have thus placed all pending claims in condition for allowance. Such allowance is earnestly and respectfully solicited.

Conclusion

Based on the amendments presented herein and based on the remarks set forth above, it is respectfully submitted that neither *Kapadia* nor *Schierholt*, alone or in combination, teach, discuss, suggest, contemplate, or require all of the steps or elements of the newly-amended independent claims. In light of the amendments and remarks presented above, reliance upon either *Kapadia* or *Schierholt* as a 35 U.S.C. § 102 or 103 reference is unwarranted. Therefore, newly-amended independent claims 1, 23, and 24 clearly define over the references of record, and now stand in appropriate condition for allowance. Likewise, it is respectfully submitted that each of the dependent claims, which merely include further limitations or details to each independent claim, is allowable for the same reasons the independent claims are allowable.

The foregoing is presented as a full and complete response to the Office Action mailed July 29, 2008, and is believed to have placed all claims in condition for allowance. Such action is courteously solicited. If any issues remain that can be resolved by telephone, the examiner is respectfully requested to contact the undersigned.

Finally, please note that the current Amendment includes 25 total claims and 3 independent claims. Because Applicant originally paid for 24 total claims and 3 independent claims, additional claims fees for one (1) additional dependent claim are submitted herewith. Since this amendment is filed within 3 months of the date of the Office Action, no extension fees or petitions for extension of time are deemed necessary. If our assessment of additional claims fees or any other fees due is in error, please charge any fees that might be due or credit any overpayment to our Deposit Account No. 50-3537. It is now believed that the application and all

of the amended claims submitted herein are now in condition for allowance and such allowance is respectfully requested.

Respectfully submitted,

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October 29, 2008

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